Docket No.: 360842009710
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Daisuke YAHATA et al.

Application No.: 10/815,769 Confirmation No.: 9944

Filed: April 2, 2004 Art Unit: 1771

For: ALIPHATIC POLYESTER MULTI-FILAMENT CRIMP YARN FOR A CARPET, AND PRODUCTION METHOD THEREOF Examiner: C. A. Juska

DECLARATION UNDER 37 CFR 1.131

MS Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

I, Kazuya Matsumura, declare under penalty of perjury under the laws of the United States of America as follows:

1. I am one of the joint inventors, who filed the above-identified application on April 2, 2004.

2. The invention claimed in the subject application was completed prior to the April 10, 2002, filing date of the Okawa et al. reference (JP 2002-105752). A redacted copy of Test Request Cards/Test Result Reports and a redacted copy of Half Monthly Reports by the Industrial Material/Interior Engineering Section of Toray Industries are enclosed. All of these reports were prepared and dated prior to April 10, 2002. These reports have been redacted to remove portions not relevant to the claimed invention. In addition, an English translation of the relevant portions has been provided for your convenience.

va-207816

3. I do not know and do not believe that the invention has been in public use or on sale in this country, or patented or described in a printed publication in this or any other foreign country for more than one year prior to our application, and I have never abandoned our invention.

4. The undersigned declares further that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

5. I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct. Executed at Otsu Japan, this Thurs day of June 14 2007.

Date: June 14, 2007

Kazuya Matsumura

Kazuya MATSUMURA, Co-inventor

三穀(四) 機能資開C 三戸部長
FAX 752-460
産FY技部 木村

QRTZ-04-0204

試験依頼伝票

宛て先：品質保証課繊維G

発　行：産FY技術部(BCF-G)

品　名	2000-136-LD28
項　目	繊度，強度，伸度，沸収，伸長率(湿)，伸長率(乾)，捲縮数，変形度，断面写真，耐光性強伸度保持率（…と同じ） (変形度、断面写真は水準No．4，5，7　．1170-54-258　N-6：耐光性強伸度保持率対応)
数　量	15CH（水準7×2CH　+1CH(N-6)）258・3158
目　的	DSCKポリ乳酸BCFの試作（B02-12）
記　事 経　歴	B-32m/c　2POS 水準　No．1～6　　水準　No．7（2本）→ 　　4.・5.］

発　行		
担当者		

受　理		
担当者		

試験結果報告書

宛て先：産FY技術部(BCF-G)　西畑副部長

発行：品質保証課

別紙　参照

なお，耐光性評価については評価終了後別途報告します

発　行		
担当者		

受　理		
担当者		

1/4

GR08-10-500831

N—BCF 試験結果報告書

あて先
繊維技術部
第1紡糸課
在FY技術 BCF—G

[redacted]

発行：□□品質保証課

実験番号		[redacted]					
品 種	2000-136-LD 28	目 的					
主 題	DSCK ポリ乳酸 BCFの試作 (802・12)						

特性 ＼ 試料 / 単位		水準 1		水準 2		水準 3	
		5 sp	6 sp	5 sp	6 sp	5 sp	6 sp
正量繊度	dtex	1523	1515	1461	1444	1582	1587
乾強力	N	22.9	23.5	19.9	18.9	15.4	15.0
乾強度	cN	1.50	1.55	1.36	1.31	0.97	0.95
乾伸度	%	41.5	41.2	41.4	40.3	32.3	31.4
沸騰水収縮率	%	2.0	1.8	2.6	3.1	6.1	5.7
~~荷重伸縮伸長率~~	~~%~~						
放縮後伸縮伸長率	%	1.0	1.2	1.0	1.0	0.9	0.9
沸水後伸縮伸長率	%	6.3	5.8	5.8	5.5	9.0	8.8
捲縮数	山/25mm	7.1	7.0	6.8	7.1	7.6	7.2
~~断面変形度~~	~~—~~						
~~中空率~~	~~%~~						

結果の概要・試験方法

発行：			□FY1-12	受理：		
(印) 担当者	(印)	(印)		(印) 担当者	(印)	

2/4

GROB-10-500621

N-BOF 試験結果報告書

あて先
繊維製造部
第1製糸課
?FY技術 BOF-G

発行：東?品質保証?

実験番号		目的	
品 種	2000-136-LD 28		
表 題	DSCKポリ乳酸 BCFの試作(B02-12)		

特性 \ 試料	単位	水準 4		水準 5		水準 6	
		5sp	6sp	5sp	6sp	5sp	6sp
正量繊度	dtex	1517	1506	2069	2051	2048	2046
乾強力	N	16.9	15.9	27.9	27.2	28.8	28.5
乾強度	cN	1.11	1.06	1.35	1.33	1.41	1.39
乾伸度	%	31.9	31.1	40.7	41.6	41.6	39.5
沸騰水収縮率	%	4.7	3.8	4.1	4.4	5.5	6.0
~~[illegible]~~	~~%~~						
乾熱後伸縮伸長率	%	1.0	1.0	1.0	1.0	0.8	1.0
沸水後伸縮伸長率	%	7.5	7.2	5.2	5.5	5.0	5.1
捲縮数	山/25mm	7.4	7.3	7.2	7.0	7.3	7.7
断面変形度	—	4.23	3.81	3.75	4.09		
~~交絡 [illegible]~~	~~%~~						

結果の概要・試験方法

発 行：

QFY1・12

受 理：

担当者

担当者

3/4

QRQB-10-5006R1

N−BCF 試験結果報告書

あて先
繊 維 製 造 部
第 1 紡 糸 課
産FY技術 BCF−G

発行：繊維品質保証課

試験番号	
品　番	2000−136−LD38
表　題	DSCKポリ乳酸 BCFの試作（B02−12）
目的	

特性 ＼ 試料 / 単位		水準7 5sp	水準7 6sp	
正量繊度	dtex	1946	1956	
乾強力	N	27.5	27.8	
乾強度	cN	1.41	1.42	
乾伸度	%	43.6	42.0	
沸騰水収縮率	%	4.1	3.7	
~~直取り伸縮伸長率~~	~~%~~			
放縮後伸縮伸長率	%	0.7	0.7	
沸水後伸縮伸長率	%	5.1	6.3	
捲縮数	山/25mm	7.5	7.4	
断面変形度	—	3.86	3.98	
~~中空率~~	~~%~~			

結果の概要・試験方法

発行：			QFY1・12	受理：		
担当者（印）	（印）	（印）		担当者（西川）	（印）	

4/4（完）

QRTZ−04−0204

試験依頼伝票

宛て先：品質保証課繊維G　　　　発 行：産FY技術部(BCF-G)

品 名	1170−68−PLAY
項 目	繊度，強度，伸度，沸収，伸長率(前)，伸長率(後)，山数
数 量	7CH
目 的	ポリ乳酸捲縮加工糸の物性確認（低熱処理、乾熱エアー） 2.3.4.5 現行。 [illegible]
記 事 経 歴	7.9.10 [illegible] CPN. A−2m/c 7POS、A−3m/c 1POS 水準 No. 2〜5、7、9、10

発 行		
西畑 担当者	/	/

受 理		
[illegible] 担当者	[illegible]	[illegible]

試験結果報告書

宛て先：産FY技術部(BCF-G)　西畑副部員殿　　　　QRQB-10-5007 発行：品質保証課

				別	紙	参	照			

発 行		
[illegible] 担当者	[illegible]	[illegible]

受 理		
西畑 担当者	本田	/

QROB-10-500681

N−BCF 試験結果報告書

あて先
岡崎技術部
第1製糸課
QFY技術 BCF−G

発行：繊維品質保証課

試験番号		
品　種	1170-68-PLAY	目的
表　題	ポリ乳酸捲縮加工糸の物性確認（後熱処理、乾熱エアー）	

特性 ＼ 単位 ＼ 試料		1170-68-PLAY						
		2	3	4	5	7	9	10
正量繊度	dtex	1089	1021	1023	1326	978	979	989
乾強力	N	16.2	18.6	18.8	10.6	16.2	19.4	18.6
乾強度	cN	1.49	1.82	1.84	0.80	1.66	1.98	1.88
乾伸度	%	44.3	37.9	35.5	50.1	35.0	33.6	35.9
沸騰水収縮率	%	1.3	2.3	3.3	2.3	2.0	3.6	1.8
~~[illegible]~~	~~%~~							
放置後伸縮伸長率	%	2.2	1.6	1.3	2.0	1.7	1.7	1.6
沸水後伸縮伸長率	%	8.0	3.9	3.3	11.5	5.8	2.6	6.1
捲縮数	山/25mm	8.0	8.1	6.6	9.4	7.7	4.6	7.4
~~[illegible]~~								
~~中空率~~	~~%~~							

結果の概要・試験方法

発行：

QFY1・12

受理：

担当者 西畑　本田

担当者

QRTZ-04-0204

試験依頼伝票

宛て先:品質保証課繊維G　　発行:産FY技術部(BCF-G)

品名 項目 数量	2200-136-PLAY 強度、延度、伸起、残収、伸長率(前)、伸長率(後)、山数、耐疲労伸度 10CH　　(検-1、2のみ)
目的	ポリ乳酸捲縮加工糸の物性確認
記事 経歴	CPN A-2m/c 7, 8POS 検-1, 2　水槽 No. ①~⑧

発行			受理		
担当者			担当者		

試験結果報告書

QRQB-10-5007

宛て先:産FY技術部(BCF-G)　本田部員/西畑副部員殿　　発行:品質保証課

				別紙参照						

発行			受理		
担当者			担当者		

1/3

QROB-10-500621

N−BOF 試験結果報告書

あて先
繊維製造部
第1紡糸課
愛FY技部 BOF−G

発行：繊維品質保証課

試験番号			
品種	2200−136−PLAY	目的	
課題	ポリ乳酸 捲縮加工糸の 物性確認		

特性 ＼ 単位 ＼ 試料		2200−136−PLAY					
		検−1	2	水洗−①	②	③	④
正量繊度	dtex	2244	2268	2163	2142	2217	2209
乾強力	N	31.2	36.2	31.3	36.0	30.6	32.4
乾強度	cN	1.39	1.60	1.46	1.68	1.38	1.47
乾伸度	%	34.1	38.6	35.3	36.2	30.0	35.4
沸騰水収縮率	%	3.6	1.8	0.6	1.1	4.1	3.2
~~沸水伸縮伸長率~~	~~%~~						
放縮後伸縮伸長率	%	1.3	2.4	4.4	3.1	2.0	1.6
沸水後伸縮伸長率	%	10.6	10.6	11.3	10.3	8.7	9.8
捲縮数	山/25mm	7.7	8.6				
~~断面変形度~~							
~~中空率~~	~~%~~						
150°C×30min乾熱 強力	N	27.6	33.5				
〃 伸度	%	36.0	42.6				
〃 強力保持率	%	88.5	92.5				
〃 伸度保持率	%	105.6	110.4				

発行：		
担当者		

愛FY1・12

受理：		
担当者		

2/3

QRQB-10-5006⑧1

N−BCF 試験結果報告書

あて先
製造部
第1製糸課
産FY技部 BCF−G

[redacted]

試験番号		発行：製造品質保証課
品名		受付 年 月 日 測定 年 月 日
金糸		目的

特性 ＼ 試料 ＼ 単位		2200-136-PLAY				
		水準-⑤	⑥	⑦	⑧	
正量繊度	dtex	2274	2272	2275	2307	
乾強力	N	30.4	33.0	40.3	36.7	
乾強度	cN	1.34	1.45	1.77	1.59	
乾伸度	%	30.8	37.1	40.9	35.5	
沸騰水収縮率	%	7.9	3.6	3.1	3.0	
~~[illegible]~~	~~%~~					
放置後伸縮伸長率	%	0.9	1.6	1.7	1.2	
沸水後伸縮伸長率	%	7.2	9.0	7.4	7.0	
~~[illegible]~~						
~~[illegible]~~						
~~[illegible]~~	~~%~~					

結果の概要・試験方法

発行：

担当者

QFY1-12

受理：

担当者

3/3 (完)

[redacted]

Test Request Card

Addressee: Quality Control Division Fiber G
Issued by: Industrial FY Engineering Department (BCF-G)

Product Name	2006-136-LD28
Item	fineness, strength, stretching, boiling water shrinkage, elongation rate (before), elongation rate (after), crimp number, deformation degree, cross-sectional photograph, retention of light resistance and stretching (The deformation degree and the cross-sectional photograph are standards No. 4, 5 and 7. 1170-54-258 N-6: corresponding to the retention of light resistance and stretching)
The Number of Samples	15CH (standard 7 × 2CH + 1CH (N-6))
Purpose	Experimental Manufacture of DSCK Polylactic Acid BCF (B02-12)
Description History	B-32m/c 2POS [redacted] standard No.1～6 [redacted] Mass Products standard No.7

Issue			Receipt		
Person in harge			Person in harge		

[redacted]

N-BCF Test Result Report

Addressee: Fiber Manufacture Department
The First Yarn Making Division
Industrial FY Engineering Department BCF-G
Issued by: Fiber Quality Control Division

Experimental Number		Received on [redacted]; Measured on [redacted]
Product Class	2000-136-LD28	**Purpose**
Title	Experimental Manufacture of DSCK Polylactic Acid BCF (B02-12)	

Sample		Standard 1		Standard 2		Standard 3	
Properties	**Unit**	5sp	6sp	5sp	6sp	5sp	6sp
Total Fineness	dtex	1523	1515	1461	1444	1582	1587
Dry Extracting Force	N	22.9	23.5	19.9	18.9	15.4	15.0
Dry Strength	cN	1.50	1.55	1.36	1.31	0.97	0.95
Dry Elongation	%	41.5	41.2	41.4	40.3	32.3	31.4
Boiling Water Shrinkage	%	2.0	1.8	2.6	3.1	6.1	5.7
crimp elongation rate	%	1.0	1.2	1.0	1.0	0.9	0.9
crimp elongation rate after being processed with boiling water	%	6.3	5.8	5.8	5.5	9.0	8.8
Crimp Number	number /25mm	7.1	7.0	6.8	7.1	7.6	7.2

Summary of Results and Test Method

Issue		
Person in Charge		

Receipt		
Person in Charge		

[redacted]

N-BCF Test Result Report

Addressee: Fiber Manufacture Department
The First Yarn Making Division
Industrial FY Engineering Department BCF-G
Issued by: Fiber Quality Control Division

Experimental Number		Received on [redacted] Measured on [redacted]
Product Class	2000-136-LD28	**Purpose**
Title	Experimental Manufacture of DSCK Polylactic Acid BCF (B02-12)	

Sample		Standard 4		Standard 5		Standard 6	
Properties	**Unit**	5sp	6sp	5sp	6sp	5sp	6sp
Total Fineness	dtex	1517	1506	2069	2051	2048	2046
Dry Extracting Force	N	16.9	15.9	27.9	27.2	28.8	28.5
Dry Strength	cN	1.11	1.06	1.35	1.33	1.41	1.39
Dry Elongation	%	31.9	31.1	40.7	41.6	41.5	39.5
Boiling Water Shrinkage	%	4.7	3.8	4.1	4.4	5.5	6.0
crimp elongation rate	%	1.0	1.0	1.0	1.0	0.8	1.0
crimp elongation rate after being processed with boiling water	%	7.5	7.2	5.2	5.5	5.0	5.1
Crimp Number	number /25mm	7.4	7.3	7.2	7.0	7.3	7.7
Deformation Degree of a Cross Section	-	4.23	3.81	3.75	4.09		

Summary of Results and Test Method

Issue		
Person in Charge		

Receipt		
Person in Charge		

[redacted]

N-BCF Test Result Report

Addressee: Fiber Manufacture Department
The First Yarn Making Division
Industrial FY Engineering Department BCF-G
Issued by: Fiber Quality Control Division

Experimental Number		Received on [redacted] Measured on [redacted]
Product Class	2000-136-LD28	**Purpose**
Title	Experimental Manufacture of DSCK Polylactic Acid BCF (B02-12)	

Sample		Standard 7	
Properties	**Unit**	5sp	6sp
Total Fineness	dtex	1946	1965
Dry Extracting Force	N	27.5	27.8
Dry Strength	cN	1.41	1.42
Dry Elongation	%	43.6	42.0
Boiling Water Shrinkage	%	4.1	3.7
crimp elongation rate	%	0.7	0.7
crimp elongation rate after being processed with boiling water	%	5.1	6.3
Crimp Number	number /25mm	7.5	7.4
Deformation Degree of a Cross Section	-	3.86	3.98

Summary of Results and Test Method

Issue		
Person in Charge		

Receipt		
Person in Charge		

[redacted]

Test Request Card

Addressee: Quality Control Division Fiber G
Issued by: Industrial FY Engineering Department (BCF-G)

Product Name	1170-68-PLAY
Item	fineness, strength, stretching, boiling water shrinkage, elongation rate (before), elongation rate (after),
The Number of Samples	the number of crimps 7CH
Purpose	Confirmation of Physical Properties of Polylactic Acid Crimped Textured Yarn (heat treatment at a low temperature, dry hot air)
Description	2, 3, 4, and 5 Current Products CPN A-2m/c 7POS , A-3m/c 1POS
History	[redacted] Standard No.2~5, 7, 9, 10

Issue		
Person in Charge		

Receipt		
Person in Charge		

[redacted]

N-BCF Test Result Report

Addressee: Fiber Manufacture Department
The First Yarn Making Division
Industrial FY Engineering Department BCF-G
Issued by: Fiber Quality Control Division

Experimental Number		Received on [redacted] Measured on [redacted]
Product Class	1170-68-PLAY	**Purpose**
Title	Confirmation of Physical Properties of Polylactic Acid Crimped Textured Yarn (heat treatment at a low temperature, dry hot air)	

Sample		1170-68-PLAY						
Properties	**Unit**	2	3	4	5	7	9	10
Total Fineness	dtex	1089	1021	1023	1326	978	979	989
Dry Extracting Force	N	16.2	18.6	18.8	10.6	16.2	19.4	18.6
Dry Strength	cN/	1.49	1.82	1.84	0.80	1.66	1.98	1.88
Dry Elongation	%	44.3	37.9	35.5	50.1	35.0	33.6	35.9
Boiling Water Shrinkage	%	1.3	2.3	3.3	2.3	2.0	3.6	1.8
crimp elongation rate	%	2.2	1.6	1.3	2.0	1.7	1.7	1.6
crimp elongation rate after being processed with boiling water	%	8.0	3.9	3.3	11.5	5.8	2.6	6.1
Crimp Number	number /25mm	8.0	8.1	6.6	9.4	7.7	4.6	7.4

Summary of Results and Test Method

Issue				**Receipt**		
Person in Charge				Person in Charge		

[redacted]

Test Request Card

Addressee: Quality Control Division Fiber G
Issued by: Industrial FY Engineering Department (BCF-G)

Product Name	2200-136-PLAY
Item	fineness, strength, stretching, boiling water shrinkage, elongation rate (before), elongation rate (after), the number of crimps, heat resistant stretching (Only Sample-1 and Sample-2)
The Number of Samples	10CH
Purpose	Confirmation of Physical Properties of Polylactic Acid Crimped Textured Yarn
Description History	CPN A-2m/c 7,8POS [redacted] Sample-1,2 Standard No.①~⑧

Issue		
Person in Charge		

Receipt		
Person in Charge		

[redacted]

N-BCF Test Result Report

Addressee: Fiber Manufacture Department
The First Yarn Making Division
Industrial FY Engineering Department BCF-G
Issued by: Fiber Quality Control Division

Experimental Number		Received on [redacted] Measured on [redacted]
Product Class	2200-136-PLAY	**Purpose**
Title	Confirmation of Physical Properties of Polylactic Acid Crimped Textured Yarn	

Sample		2200-136-PLAY					
Properties	**Unit**	Sample		Standard			
		1	2	①	②	③	④
Total Fineness	dtex	2244	2268	2163	2142	2217	2209
Dry Extracting Force	N	31.2	36.2	31.3	36.0	30.6	32.4
Dry Strength	cN	1.39	1.60	1.45	1.68	1.38	1.47
Dry Elongation	%	34.1	38.6	35.3	36.2	30.0	35.4
Boiling Water Shrinkage	%	3.6	1.8	0.6	1.1	4.1	3.2
crimp elongation rate	%	1.3	2.4	4.4	3.1	2.0	1.6
crimp elongation rate after being processed with boiling water	%	10.6	10.6	11.3	10.3	8.7	9.8
Crimp Number	number /25mm	7.7	8.6				
Heat Resistant Strength at 150°C for 30 minutes	N	27.6	33.5				
HeatResistant Elongation at 150°C for 30 minutes	$	36.0	42.6				
Heat Resistant Retention of Strength at 150°C for 30 minutes	%	88.5	92.5				
Heat Resistant Retention of Elongation at 150°C for 30 minutes	%	105.6	110.4				

Issue		
Person in Charge		

Receipt		
Person in Charge		

[redacted]

N-BCF Test Result Report

Addressee: Fiber Manufacture Department
The First Yarn Making Division
Industrial FY Engineering Department BCF-G
Issued by: Fiber Quality Control Division

Experimental Number		Received on [redacted] Measured on [redacted] 2001
Product Class	2200-136-PLAY	**Purpose**
Title	Confirmation of Physical Properties of Polylactic Acid Crimped Textured Yarn	

Sample		2200-136-PLAY					
Properties	**Unit**	Standard					
		⑤	⑥	⑦	⑧		
Total Fineness	dtex	2274	2272	2275	2307		
Dry Extracting Force	N	30.4	33.0	40.3	36.7		
Dry Strength	cN	1.34	1.45	1.77	1.59		
Dry Elongation	%	30.8	37.1	40.9	35.5		
Boiling Water Shrinkage	%	7.9	3.6	3.1	3.0		
crimp elongation rate	%	0.9	1.6	1.7	1.2		
crimp elongation rate after being processed with boiling water	%	7.2	9.0	7.4	7.0		
Summary of Results and Test Method							

Issue		
Person in Charge		

Receipt		
Person in Charge		

１．ポリ乳酸繊維の非衣料用途開発

（１）トヨタコンソーシアム関連

Ａ．Ｌポリ乳酸ＢＣＦ使いのオプションマットは、トヨタ純正技術標準規格（ＴＳＦ）に基づく評価の結果、臭気性を除くすべての項目が基準値をクリアし、２００３年６月発売の“ラウム”に採用が内定した。東和織物委託により、東レから豊田通商にテキスタイル原反を供給することに決定し、２００２年６月目標で今後生産技術を詰める。

1．ポリ乳酸繊維の非衣料用途開発

（1）トヨタコンソーシアム関連において、トヨタ自動車は、２００３年６月発売の小型自動車（ビッツ）にポリ乳酸短繊維使いのバックドアボード、及びポリ乳酸ＢＣＦ使いのオプションマットを本格採用することに決めた。現在、上記車輌規格を前提にした原綿（６ｄ－５１ｍｍ）、ＢＣＦ（２０００Ｄ）の中量試作のための検討を開始した。

１．ポリ乳酸繊維の非衣料用途展開

ポリ乳酸ＢＣＦ第２回試作糸１１７０Ｔ－６８ｆを用いて、東和織物にて先染糸によるカーマットを試作した結果、染色堅牢度は４級をクリアし、品位等にも大きな問題はなかった。タフト針による融着が認められ、今後、加工条件の適正化を進める。

2．ポリ乳酸繊維のカーペットパイル糸への展開

ポリ乳酸繊維を用いたBCF加工糸の染着挙動を確認した結果、濃色系について、110℃で分散性、物性ともにほぼ問題ないことを確認した。また、発色性は良好であるが、染色堅牢度はPET対比劣位であり、今後改善検討を進める。

Year: H13 (2001)

Month: [redacted] **Section:** [redacted]

Name of Section and Group: Industrial Material · Interior Engineering Section

Report

2. Development of Polylactic Acid Fiber to Pile Yarn for Carpets

The dying behavior of BCF textured yarn using polylactic acid fiber was tested; as a result, it was confirmed that there was almost no problem in dispersibility and physical properties at 110°C in case of a deep color system. Also, the chromogenic property is good, but the dye fastness is inferior to that of PET. We are going to study and develop the improvement in the future.

Creation Date: [redacted] **Creator:** Takashi Shiotani/TORAY

Year: H13 (2001)
Month: [redacted] **Section:** [redacted]
Name of Section and Group: Industrial Material · Interior Engineering Section

Report

1. Development of Polylactic Acid Fiber for Use of Non-Clothing Material

Prototype car mats were made of colored yarns using the second prototype polylactic acid BCF yarn 1170T-68f by TOWA ORIMONO CO., LTD.; as a result, they passed the fourth class of the dye fastness, and there was no big problem in appearance quality and the like. However, fusion bonding was caused on the mats by using tuft needles, and accordingly, the optimization of the processing conditions will be studied in the future.

Creation Date: [redacted] **Creator:** Takashi Shiotani/TORAY

Year: H13 (2001)
Month: [redacted] **Section:** [redacted]
Name of Section and Group: Industrial Material · Interior Engineering Section

Report

1. Development of Polylactic Acid Fiber for Use of Non-Clothing Material

(1) In connection with TOYOTA Consortium, TOYOTA MOTOR CORPORATION has decided that back door boards using the polylactic acid short fiber and optional mats using the polylactic acid BCF will be officially used in the minicar (Bits) released in June, 2003. Now, we started to study for the medium-volume trial manufacture of the raw cotton (6 d-51 mm) and BCF (2000D) based on the above-mentioned motor vehicle standard.

Creation Date: [redacted] **Creator:** Takashi Shiotani/TORAY

Year: H13 (2001)
Month: [redacted] **Section:** [redacted]
Name of Section and Group: Industrial Material · Interior Engineering Section

Report

1. Development of Polylactic Acid Fiber for Use of Non-Clothing Material

(1) TOYOTA Consortium Relationship

A. The optional mats using the L-polylactic acid BCF were evaluated based on TOYOTA Specified Parts Technology Standards (TSF); as a result, it was confirmed that the mats reached standard levels in all items other than odor, and they were informally decided to be used in "RAUM", which will be released in June 2003. It was decided that the whole textile cloth, consigned by TOWA ORIMONO CO., LTD., is supplied to TOYOTA TSUSHO CORPORATION from TORAY Industries, Inc., and the manufacturing technique will be finalized with the goal of starting the supply in June, 2002 in the future

Creation Date: [redacted] **Creator:** Takashi Shiotani/TORAY